

In the matter of

Inquiry Regarding Carrier Current Systems,  
including Broadband over Power Line Systems

Comments of Jan A. Tarsala:

1. I write to express my gravest reservations concerning the deployment of Broadband over Power Line (BPL) systems. Incumbent, licensed users of the radio spectrum must be protected from BPL interference. To this end, the Commission asks a number of questions in this Notice of Inquiry, ET Docket Number 03-104, (the Inquiry), most of them relating to BPL technical standards necessary to prevent such interference, and I will focus my comments on but two of the questions posed by the Commission in Paragraphs 15 and 30 of the Inquiry. I make these comments as a practicing microwave engineer at a Federally-Funded Research and Development Center with a Master of Science in Electrical Engineering degree, as a holder of a General Radiotelephone Operator's License and former broadcasting Chief Engineer, and as an Extra Class Amateur Radio licensee. My 28 years of professional experience, graduate-level college engineering education, and 36 years in amateur radio provide me with the analytical and practical background to respond to this Inquiry.

2. In Paragraph 15 of the Inquiry, the Commission asks (among other things): What spectrum should BPL use? Given that it is inevitable that BPL systems will radiate interfering signals at some time for some reason, and given that the victim services include both Government and non-Government spectrum users, domestic as well as foreign, it is essential that BPL systems operate on frequencies where skywave (ionospheric) propagation is unlikely. Avoiding skywave propagation is the best insurance that interference conflicts will be constrained to be a local issue. It is generally assumed by communication engineers that skywave propagation becomes comparatively rare at frequencies above 30 MHz, thereby delimiting the proposed lower frequency limit for BPL systems. This frequency range where skywave first gives way to direct line-of-sight propagation is commonly referred to as the Low VHF (Very High Frequency) band. The upper limit for the Low VHF band is generally taken to be the bottom of the domestic frequency modulation broadcasting band at 88 MHz. For the sake of the analysis below, let us assume a slightly lower frequency for the transition from skywave to direct propagation of 25 MHz. At the upper end of the proposed BPL spectrum, let us extend the current technology by a mere 10 %, from the current 80 MHz of the present experimental BPL licenses to a hypothetical 88 MHz. The proposed BPL spectrum would then be 63 MHz wide (from 25 MHz to 88 MHz), which is a modest 20 % reduction from that of the current BPL experimental licenses. In exchange for this small reduction in BPL bandwidth allocation and the trivial extension of BPL upper frequency capability, skywave propagation can be effectively avoided. BPL operation in the Low VHF band is a sensible, pragmatic solution to avoiding the domestic and international interference conflicts from BPL.

3. In Paragraph 30 of the Inquiry, the Commission asks for "comments on any other matters or issues...that may be pertinent to BPL

technology." Given the inevitability of BPL interference leakage due to

- a) the tens of thousands of deployed BPL terminals and repeaters that are expected;
- b) their mounting at substantial heights out of doors and in the clear;
- c) marginal, cost-driven BPL plant equipment;
- d) installation heterogeneity, anomalies, and errors;
- e) weathering and wear-out of equipment; and
- f) lightning damage,

and presuming that localization of the interference source can take place, who shall be responsible for BPL interference resolution? Is it

- i) the BPL customer end-user,
- ii) the BPL equipment manufacturer,
- iii) the Internet Service Provider,
- iv) the inside plant (e.g. building) owner,
- v) the outside plant (e.g. right-of-way) owner,
- vi) the electrical utility,
- vii) some of the above, or
- viii) all of the above?

Moreover, who shall be the arbiter of the adequacy of interference incident resolution? Is the arbiter

- A) any of the above parties (i through vi),
- B) a consulting engineer,
- C) an external organization having technical competency, or
- D) the FCC Enforcement Division or the FCC Office of Engineering and Technology?

Similarly, to whom shall appeals regarding interference resolution be made:

- I) an FCC Administrative Law Judge,
- II) the Federal courts,
- III) civil courts, or
- IV) a state public utilities commission?

Experience with powerline noise resolution suggests that BPL interference problems will be treated as an inconsequential, nuisance complaint with all the concomittent foot-dragging, buck-passing, staffing inadequacies, and technical ineptitude that has been demonstrated by my own electrical utility, Southern California Edison, in resolving interference to me from its medium voltage 60 Hz power distribution infrastructure. The Commission must establish a clear process by which BPL interference events can be swiftly resolved.

Should

the Commission unwisely place BPL spectrum at frequencies where skywave propagation can occur, interference to foreign interests would become a Department of State matter. The Commission should evaluate the drain on the resources of its own divisions BPL interference cases will impose, and a BPL user fee is one way of equitably funding these anticipated activities.

4. BPL should operate in the Low VHF band where skywave propagation is unlikely and interference events can be constrained to be a local matter. The responsibility and obligations for BPL interference resolution must be established by the Commission, along with a BPL interference resolution arbitration and appeal process.

I thank the Commission for its attention to these my comments.

Respectfully submitted this Sixth Day of July, 2003.

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